

CLAIMS

1. A multicolor light-emitting device
comprising a plurality of organic electroluminescence
5 devices each having an organic compound layer
including a light-emitting layer between a first
electrode and a second electrode,

said plurality of organic electroluminescence
devices having different emission spectra of two or
10 more colors,

wherein light-emitting regions in the light-
emitting layer of the organic electroluminescence
devices having the different emission spectra are
located in different positions in a layer thickness
15 direction of the light-emitting layer corresponding
to said different emission spectra.

2. The multicolor light-emitting device
according to claim 1, wherein said organic compound
layer has a stacked structure in which the light-
20 emitting layer is sandwiched at least between a first
charge-transporting layer and a second charge-
transporting layer.

3. The multicolor light-emitting device
according to claim 2, wherein said first electrode is
25 a reflecting electrode that reflects light;

said second electrode is a transparent
electrode; and

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said first charge-transporting layer is located at a first electrode side of the light-emitting layer.

4. The multicolor light-emitting device according to claim 3, wherein of emission of two
5 different colors, a position of the light-emitting region in a shorter wavelength light-emitting layer that is the light-emitting layer of the organic electroluminescence device for emitting a light of shorter wavelength is closer to the first electrode
10 than a position of the light-emitting region in a longer wavelength light-emitting layer that is the light-emitting layer of the organic electroluminescence device for emitting a light of longer wavelength.

15 5. The multicolor light-emitting device according to claim 3, wherein of emission of two different colors,

a shorter wavelength light-emitting layer that is the light-emitting layer of the organic
20 electroluminescence device for emitting a light of shorter wavelength has properties of preferentially transporting holes;

a longer wavelength light-emitting layer that is the light-emitting layer of the organic
25 electroluminescence device for emitting a light of longer wavelength has properties of preferentially transporting electrons;

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said first charge-transporting layer is an electron-transporting layer that preferentially transports electrons; and

said second charge-transporting layer is a
5 hole-transporting layer that preferentially transports holes.

6. The multicolor light-emitting device according to claim 3, wherein of emission of two different colors,

10 a shorter wavelength light-emitting layer that is the light-emitting layer of the organic electroluminescence device for emitting a light of shorter wavelength has properties of preferentially transporting electrons;

15 a longer wavelength light-emitting layer that is the light-emitting layer of the organic electroluminescence device for emitting a light of longer wavelength has properties of preferentially transporting holes;

20 said first charge-transporting layer is a hole-transporting layer that preferentially transports holes; and

said second charge-transporting layer is an electron-transporting layer that preferentially
25 transports electrons.

7. The multicolor light-emitting device according to claim 2, wherein the light-emitting

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8. The multicolor light-emitting device according to claim 2, wherein a material and a thickness of said first charge-transporting layer are the same as those for all of the organic electroluminescence devices.

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than a position of the light-emitting region in a longer wavelength light-emitting layer that is the light-emitting layer of the organic electroluminescence device for emitting a light of
5 longer wavelength.

12. The multicolor light-emitting device according to claim 10, wherein of emission of two different colors,

a shorter wavelength light-emitting layer that
10 is the light-emitting layer of the organic electroluminescence device for emitting a light of shorter wavelength has properties of preferentially transporting holes;

a longer wavelength light-emitting layer that
15 is the light-emitting layer of the organic electroluminescence device for emitting a light of longer wavelength has properties of preferentially transporting electrons; and

said first charge-transporting layer is an
20 electron-transporting layer that preferentially transports electrons.

13. The multicolor light-emitting device according to claim 10, wherein of emission of two different colors,

25 a shorter wavelength light-emitting layer that is the light-emitting layer of the organic electroluminescence device for emitting a light of

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shorter wavelength has properties of preferentially transporting electrons;

a longer wavelength light-emitting layer that is the light-emitting layer of the organic
5 electroluminescence device for emitting a light of longer wavelength has properties of preferentially transporting holes; and

said first charge-transporting layer is a hole-transporting layer that preferentially transports
10 holes.

14. The multicolor light-emitting device according to claim 10, wherein the light-emitting layer has a thickness in a range of 10 to 35 nm.

15. The multicolor light-emitting device
15 according to claim 10, wherein a material and a thickness of said first charge-transporting layer are the same as those of all of the organic electroluminescence devices.

16. The multicolor light-emitting device
20 according to claim 1, wherein said two or more different emission spectra are emission spectra exhibiting red, green and blue.

17. A display having the multicolor light-emitting device according to claim 1.

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